

MANGALORE UNIVERSITY
DEPARTMENT OF COMPUTER SCIENCE
MASTER OF COMPUTER APPLICATIONS
(MCA)PROGRAMME

MCAS505:CLOUD AND GRID COMPUTING		
Hours/Week: 4 Credits : 4		I.A. Marks: 30 Exams. Marks: 70
<u>Course Outcomes:</u> CO1: Demonstrate an in-depth understanding characteristics of grid and cloud computing; CO2: Demonstrate an in-depth understand of the design principles of grid and cloud computing; CO3: Illustrate security mechanisms in grid and cloud computing applications; CO4: Design and demonstrate distributed computing applications.		
	UNIT-I	12 Hours
Introduction : Evolution of Distributed computing: Scalable computing over the Internet – Technologies for network based systems – clusters of cooperative computers - Grid computing Infrastructures – cloud computing - service oriented architecture – Introduction to Grid Architecture and standards – Elements of Grid – Overview of Grid Architecture. Grid Services: Introduction to Open Grid Services Architecture (OGSA) – Motivation – Functionality Requirements – Practical & Detailed view of OGSA/OGSI – Data intensive grid service models – OGSA services		
	UNIT-II	12 Hours
Virtualization: Cloud deployment models: public, private, hybrid, community – Categories of cloud computing: Everything as a service: Infrastructure, platform, software - Pros and Cons of cloud computing – Implementation levels of virtualization – virtualization structure – virtualization of CPU, Memory and I/O devices – virtual clusters and Resource Management – Virtualization for data center automation.		
	UNIT-III	12 Hours
Programming Model 9 Open source grid middleware packages – Globus Toolkit (GT4) Architecture , Configuration – Usage of Globus – Main components and Programming model - Introduction to Hadoop Framework - Mapreduce , Input splitting, map and reduce functions, specifying input and output parameters, configuring and running a job – Design of Hadoop file system , HDFS concepts, command line and java interface, dataflow of File read & File write.		
	UNIT-IV	12 Hours
Security 9 Trust models for Grid security environment – Authentication and Authorization methods – Grid security infrastructure – Cloud Infrastructure security: network, host and application level – aspects of data security, provider data and its security, Identity and access management architecture , IAM practices in the cloud, SaaS, PaaS, IaaS availability in the cloud, Key privacy issues in the cloud.		

REFERENCE BOOKS

1. Kai Hwang, Geoffery C. Fox and Jack J. Dongarra, “Distributed and Cloud Computing: Clusters, Grids, Clouds and the Future of Internet”, First Edition, Morgan Kaufman Publisher, an Imprint of Elsevier, 2012.
2. Jason Venner, “Pro Hadoop- Build Scalable, Distributed Applications in the Cloud”, A Press, 2009.
3. Tom White, “HadoopThe Definitive Guide”, First Edition. O’Reilly, 2009.
4. Bart Jacob (Editor), “Introduction to Grid Computing”, IBM Red Books, Vervante, 2005.
5. Ian Foster, Carl Kesselman, “The Grid: Blueprint for a New Computing Infrastructure”, Morgan Kaufmann, 2nd Edition.
6. Frederic Magoules and Jie Pan, “Introduction to Grid Computing” CRC Press, 2009.
7. Daniel Minoli, “A Networking Approach to Grid Computing”, John Wiley Publication, 2005.

